Catherine Downen
ODA Enterprise Program Administrator - TC
500 Gulfstream Road
M/S R-07
Savannah, GA 31407 USA
Telephone +1 912 395 0912
Catherine.Downen@gulfstream.com

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U.S. Department of Transportation
Docket Operations
West Building Ground Floor, Room W12-140
1200 New Jersey Avenue, SE.
Washington, DC 20590

Subject: Request for Revision to Exemption No. 18556A – Exemption from Section 25.813(e) of Title 14 Code of Federal Regulations, Installation of Mid Cabin Pocket Doors

Enclosure(s):
1) Petition for Permanent Exemption – Gulfstream Aerospace Corporation – Installation of Mid Cabin Pocket Doors – Model GVIII-G800

Reference(s):
1) Regulatory Docket No. FAA-2020-0108, Exemption No. 18556A, dated January 28, 2021, Exemption from Section 25.813(e) of Title 14, Code of Federal Regulations
2) Regulatory Docket No. FAA-2017-1046, Exemption No. 18007, dated October 5, 2018, Exemption from Section 25.813(e)(1) of Title 14, Code of Federal Regulations
3) Regulatory Docket No. FAA-2016-7819, Exemption No. 17119A, dated October 15, 2019, Exemption from Section 25.813(e) of Title 14, Code of Federal Regulations

ODA Project Number(s): AT-01-2015-0017

Dear Sirs:

In accordance with 14 CFR Part 11, Gulfstream Aerospace Corporation requests consideration to revise Regulatory Docket No. FAA-2020-0108, Exemption No. 18556A, dated January 28, 2021 (Reference 1) originally issued to relieve the Gulfstream GVIII-G700 model aircraft from full compliance with 14 CFR 25.813(e) at amendment 25-116, Emergency Exit Access, for the requirement that no door may be installed between any passenger seat that is occupiable for takeoff and landing and any passenger exit. This revision to the exemption is being requested to include the Gulfstream GVIII-G800 model aircraft, a derivative model of the GVI aircraft. Petition for Permanent Exemption – Gulfstream Aerospace Corporation – Installation of Mid Cabin Pocket Doors – Model GVIII-G800 is provided in support of this request (Enclosure 1).

Gulfstream believes that good cause exists why action on this petition should not be delayed by publication and comment procedures. We request that the 120-day FAA review and processing period specified in 14 CFR 11.63 (d) be reduced to 60 days. Gulfstream feels this request is appropriate as it does not set a precedent, and because the relief requested herein is equivalent to exemptions granted previously (References 1-3).

Should you have any further questions, or require any additional information, please contact CAO Airworthiness Engineering Specialist Andrea Burkhardt at Andrea.Burkhardt@gulfstream.com or (912) 251-1712 (office), or TC Program Administrator Tom Strohmayer at Thomas.Strohmayer@gulfstream.com, (912) 395-7778 (office) or (912) 433-6002 (mobile).

Respectfully,

Catherine M. Downen

Catherine Downen
ODA Enterprise Program Administrator - TC
Gulfstream Aerospace Corporation

Petition for Permanent Exemption
Gulfstream Aerospace Corporation
Installation of Mid Cabin Pocket Doors
Model GVIII-G800

This petition is to amend Exemption 18556A to include the model GVIII-G800.

Relief from Section 14 CFR Part 25.813(e) Amendment 25-128

Gulfstream Aerospace Corporation (Gulfstream) of Savannah, Georgia has submitted application to the FAA's Atlanta Aircraft Certification office for amended type certification of a GVI derivative product of similar design and manufacture to be known as the Gulfstream model GVIII-G800. Project number AT-01-2015-0017 has been assigned to these efforts.

The GVIII-G800 will be certified in two phases. The production phase will be the basic aircraft Type Certificate. The GVIII-G800 production phase type design will not include a cabin interior. The completions phase will include installation of the final aircraft interior. The installation of the final aircraft interior will be conducted separately via a Supplemental Type Certificate. The airplane will be certified for a passenger seating configuration (passenger seating maximum capacity) of nineteen (19) passengers.

14 CFR 25.813(e), Amendment 25-128 states that no door may be installed between any passenger seat that is occupiable for takeoff and landing and any passenger emergency exit, such that the door crosses any egress path (including aisles, cross-aisles and passageways).

The GVIII-G800 cabin interior relies on installation of mid cabin pocket doors to divide different sections of the passenger cabin areas and provide certain amenities and configuration options that have become standard for executive class airplanes.

In accordance with the provisions of 14 CFR 11.81, Gulfstream requests an exemption to 14 CFR 25.813(e) for the GVIII-G800 for mid cabin pocket doors installation. Gulfstream proposes that specific design features, combined with the unique configuration of the GVIII-G800, will provide an overall level of safety equivalent to that of Amendment 25-128. Based on these features, Gulfstream proposes that this exemption be applicable to non-commercial operations (14 CFR Part 91) and commercial operations (14 CFR Part 135).

Supportive Information

The FAA notice of proposed rulemaking (NPRM) number 96-9 summarizes the history and rationale associated with 14 CFR Part 25 Amendments 25-15 and 25-116; the former of which prohibits installation of interior doors between passenger compartments and the latter of which prohibits installation of interior doors between passenger seats and emergency exits:

> Following accident experience in the 1960s, the FAA amended Part 25 in Amendment 25-15 to prohibit the installation of doors between passenger compartments. At the time of the

amendment, it was common practice to divide the first class and tourist class cabins with a solid door. It was determined in the course of accident investigations that this door could be detrimental in evacuation of passengers, who tended not to recognize that there was an exit beyond the door, even if it were the closest available.

It is now considered undesirable to permit the installation of a door between any passenger and an exit. Should such a door (either through omission or mechanical failure) become jammed in the event of an emergency evacuation, persons could be prevented or delayed in evacuating, which could result in fatalities or injuries that would not otherwise have occurred.

The hazards associated with a jammed door are still present whether or not passengers are on both sides of the door, and the recognition factor has not been mitigated. Either could result in the same consequences – failure of some passengers to evacuate the airplane.

The European Union Aviation Safety Agency (EASA) has recently amended their certification specifications (CS-25) to introduce airworthiness requirements for non-commercially operated airplanes and low-occupancy airplanes in order to minimize the burden associated with certification of executive interiors. The EASA requirements of Appendix S to CS-25 capture the fundamental requirements that interior doors must meet in order to provide an acceptable level of safety.

EASA issued Appendix S at Amendment 19 and included the following requirements for non-commercially operated, commercially operated, and low-occupancy airplanes:

- §S25.10(a) Interior Doors on Non-Commercially Operated Airplanes
- §S25.10(b) Interior Doors on Commercially Operated Airplanes

The FAA wrote a letter, dated June 23, 2017, to the General Aviation Manufacturers Association (GAMA) indicating the intent to consider alternatives to direct compliance with 14 CFR 25.813(e) through the exemption process for petitioners that propose installation of interior doors operated under 14 CFR Part 135.

The FAA has granted Exemptions 10338B and 18007 to other OEMs, as well as Exemption 17045 for GVII-G500 and Exemption 18556A for the GVIII-G700, allowing installation of doors in the passenger compartment for non-commercially and commercially operated airplanes.

For the GVIII-G800 airplane, Gulfstream believes that it is possible to provide a level of safety consistent with the intent of the 14 CFR Part 25 regulations while allowing installation of certain mid cabin interior doors. This will be accomplished by incorporating specific design features that provide an acceptable level of safety.

Factors Supporting the Petition

The Gulfstream GVIII-G800 will comply with CS 25 Appendix S §S25.10(a), which states:

(a) *Interior Doors on Non-Commercially Operated Aeroplanes:* For a non-commercially operated aeroplane, installation of doors that results in non-compliance with CS 25.813(e) is acceptable provided that it is ensured by design and procedures that:
   (1) Each door is open before entering any of the taxiing, take-off, and landing phases;
   (2) Each door remains open during taxiing, take-off, and landing, and especially during and after a crash landing; and
   (3) In the case of any probable failure or jamming of a door in a position other than fully open, any occupant is able, from any compartment separated by that door, to restore in an easy and simple manner a sufficient opening to access the compartment on the other side of the door

The Gulfstream GVIII-G800 will comply with CS 25 Appendix S §S25.10(b)(2) which states:

(b) *Interior Doors on Commercially Operated Aeroplanes:* For a low-occupancy aeroplane having a passenger seating configuration of 19 or less, installation of doors that results in non-compliance with CS 25.813(e) is acceptable provided that the conditions of S25.10(a)(1), S25.10(a)(2) and S25.10(a)(3) are complied with and the following additional requirements are met for each passenger compartment created by a door or doors.
   (2) Within the compartment, there is at least one emergency exit above the waterline on one side of the fuselage that meets at least the requirements of a type IV emergency for a compartment that has a passenger seating configuration of nine seats or less, or of a type III emergency exit otherwise, and:
      i. An occupant of the compartment would not need to go through more than one door to access an emergency exit above the waterline on the other side of the fuselage; and
      ii. The demonstration of compliance with the provisions of S25.10(a)(1) and (2) does not rely on any passenger action, nor involve any flight crew member leaving their position in the cockpit.

The requirements of S25.10(a) and S25.10(b)(2), as well as the associated guidance, form the foundation of this request for exemption. The following GVIII-G800 design features will ensure that the passengers' ability to effectively egress the airplane is not diminished.

Mid Cabin Pocket Doors for Non-Commercial Operations (14 CFR Part 91)

(1) The Mid Cabin Pocket Doors will be open before entering any of the taxi, takeoff, and landing phases. On the ground, the Mid Cabin Pocket Doors will be inhibited from closing when the Main Entry Door is not open. In flight, the Mid Cabin Pocket Doors will be designed to automatically open (stow) based on the airplane being configured for landing. The Mid Cabin Pocket Doors will track laterally to open / close.

(2) The Mid Cabin Pocket Doors will be placarded to be open and latched during taxiing, takeoff, and landing phases. An advisory Crew Alerting System (CAS) message will alert the pilots if the Mid Cabin Pocket Doors are not in the properly stowed position when the

airplane is in flight within 30 nm from the destination airport and at an altitude less than the Landing Field Elevation + 10,000 ft. The advisory CAS message will be replaced with a caution CAS message when the landing gear or flaps are extended from the up position. On the ground, the caution CAS message will display when the Mid Cabin Pocket Doors are not in the properly stowed position and the main entry door is not open.

(3) The Mid Cabin Pocket Doors will have a dual redundant lock, each of which is capable of withstanding the inertial loads specified in 14 CFR 25.561. The Mid Cabin Pocket Doors will be designed so that for any failure of the closing/latching mechanism, the doors will default to the open (stowed) position.

(4) The Mid Cabin Pocket Doors will be designed to protect components from damage caused by items blocking door operation, misalignment of the mechanism, and minor deformation of the structure that would prevent the door from being correctly positioned for taxi, takeoff, and landing.

(5) The Mid Cabin Pocket Doors can be opened from either side of the door.

(6) The Mid Cabin Pocket Doors system will be designed to prevent overheating of the components that could be an ignition source. The Mid Cabin Pocket Doors will undergo environmental testing.

(7) The effects of decompression on Mid Cabin Pocket Doors will be considered in the decompression analysis.

(8) The Mid Cabin Pocket Doors operation will not be hazardous to occupants. The over-torque feature will stop the door travel and retract the door to the stowed position if it contacts an occupant or obstacles.

(9) The Mid Cabin Pocket Doors will be frangible in either direction. The Mid Cabin Pocket Doors will include an emergency passage feature (EPF) to allow passage of the occupants or rescue personnel if the door becomes jammed. A placard will be installed on each side of the door providing instruction on the operation of the EPF. The applicant will demonstrate that a 5th percentile female can break through or remove the EPF from both sides of the door and that a 95th percentile male subject can exit through the EPF opening. The passenger briefing will include a description of the operation of the door, including its frangibility features.

(10) Appropriate limitations will be established in the Flight Manual specifying that the Mid Cabin Pocket Doors must be in the open configuration for taxi, takeoff, and landing, and procedures to be followed if one or more of the doors are not secured open for taxi, takeoff, and landing.

Mid Cabin Pocket Doors for Commercial Operations (14 CFR Part 135)

In consideration of the additional requirements imposed by EASA for commercial operations, mid cabin pocket doors meeting CS 25 Appendix S §S25.10(b)(2) requirements will comply with all the above listed criteria and include the following additional design features to allow door installation for commercial operation (14 CFR Part 135):

(11) The GVIII-G800 includes four over-wing emergency exit doors of an inward opening, plug-type design – two paired on each side of the fuselage above the wing. The GVIII-G800 Overwing Emergency Exit Doors (EEDs) are identical to the GVI and GVII Overwing Emergency Exit Doors in shape and size. In order to comply with TC8700AT-T-C-1, Equivalent Level of Safety Finding on Emergency Exits for the Gulfstream Model GVI Series Aircraft (FAA Project TC8700AT-T), Gulfstream has demonstrated under the GVII program that a pair of exits with predicted encroachment allows occupants to pass through the remaining opening in less time than that required for a single Type III exit. Each pair of Exits is considered a Type III under TC8700AT-T-C-1 ELOS; but, individually, each exit exceeds the requirements for a Type IV Exit.

(12) Within the compartment, there will be at least one emergency exit above the waterline on each side of the fuselage that meets the requirements for a Type IV Exit.

(13) A control in the cockpit will be added to remotely activate the opening and retention of the doors in the open and secure position. The control will be compliant with 14 CFR 25.777.

(14) The operation of the Mid Cabin Pocket Doors to be closed (deployed) will require manual activation. The doors will be designed so that they can only be closed (deployed) when the aircraft is in flight and the landing gear and flaps are fully retracted, or when the aircraft is on the ground and the main entry door is open.

(15) Manual operation to the open (stowed) position is the primary means by which the doors should be opened and stowed for taxi, takeoff, and landing. The cockpit control to remotely activate the opening will ensure clear egress paths in the event that manual operation has not occurred.

(16) Doors will stow and lock if there is a loss of power.

Some operators transition between non-commercial and commercial operations. For these types of operations:

(17) Any mid cabin pocket door not meeting CS 25 Appendix S §S25.10(b)(2) requirements will be locked in the open position for taxi, takeoff, and landing for commercial operations. The

doors will be equipped with a locking device to retain the door in the stowed position, to be used if the aircraft is operated for hire. This locking device will physically secure the door in a stowed condition using a fastener which requires the use of a special tool, preventing passengers from removing the lockout feature and deploying the door.

(18) Any mid cabin pocket door meeting CS 25 Appendix S §S25.10(b)(2) requirements will include the same design features for commercial and non-commercial operation.

Effect of the Exemption on Safety

Acceptance of the proposed GVIII-G800 design will ensure that a level of safety consistent with the intent of the regulation has been provided. The design of the proposed interior doors will ensure the same level of safety for cabin egress as is required for any emergency exit and will provide a clear egress path. This, combined with the other characteristics of the GVIII-G800 such as redundancy of large-area, over-wing emergency exits and optimal location of emergency exits, will provide a level of safety exceeding that currently prescribed under Amendment 25-128 to 14 CFR Part 25.

Issue of Public Interest

Gulfstream Aerospace Corporation designs, develops, manufactures, markets, and services the world's most technologically advanced business jet aircraft to an international market. Gulfstream's leadership position in the global business jet market is due to the efforts of its nearly eleven thousand employees in the manufacturing plants, completion centers, and service centers across North America. The corporation utilizes numerous products, such as avionics and environmental control systems, from scores of suppliers located throughout the United States. Gulfstream competes for new business all over the world. This exemption will directly impact the options to be offered to prospective customers who prefer a cabin configuration that provides private areas for business as well as additional crew rest areas for long-haul commercial operations, thereby having a direct effect on GVIII-G800 sales. The ability to provide additional cabin separations is being requested by prospective aircraft operators who compare the GVIII-G800 with products of European and other foreign aircraft manufacturers. The European Union Aviation Safety Agency (EASA) amended their certification specifications (CS-25) to introduce airworthiness requirements for non-commercially operated airplanes and low-occupancy airplanes in order to minimize the burden associated with certification of executive interiors. The inability to provide such features on FAA certified airplanes will ultimately cause a reduction in prospective sales when the FAA ultimate goal is to harmonize the regulation with EASA Appendix S requirements. The manufacture, completion, and support of Gulfstream aircraft aids in the stabilization of the job market as well as the growth of the American economy, which is in the interest of the public. The advancement of aircraft safety is in the interest of the public.

The granting of an exemption from the requirement of 14 CFR 25.813(e) for the Gulfstream model GVIII-G800 airplane is in the public interest because it allows for the certification of interior doors, which are considered by owners and operators of business jets to be an essential means of providing privacy to passengers and crew on aircraft that offer benefits in terms of fuel efficiency, reduced emissions, reduced noise, and enhanced safety compared to in-service models on which interior doors are allowed to be installed.

Operation Outside the United States

Per 14 CFR Part 11.81(h), Gulfstream requests consideration be given to extending this exemption for operation outside of the United States. Gulfstream aircraft are routinely registered and operated outside of the United States. Gulfstream believes that limiting this exemption to use within the U.S. would put unfair restrictions on the marketability of this aircraft.

Conclusion

Gulfstream believes that the above arguments favor an exemption from 14 CFR 25.813(e) that would allow for installation of mid-cabin interior doors on the GVIII-G800 aircraft. In addition, Gulfstream believes that an exemption is in the public interest and will provide a level of passenger safety consistent with the current 14 CFR Part 25 regulations.